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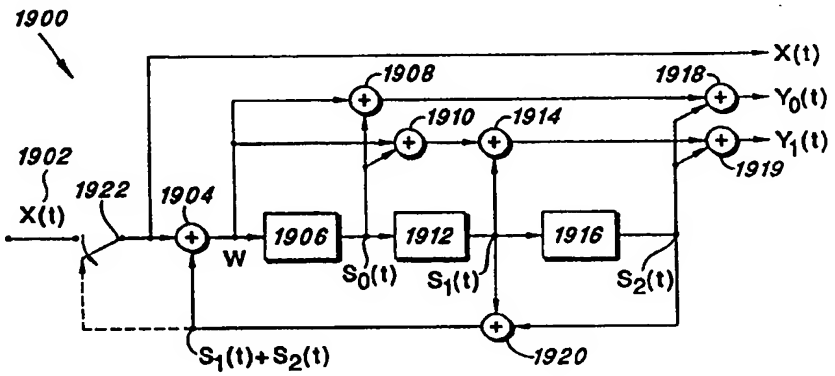
(54) Title: OPTIMIZED RATE-COMPATIBLE TURBO ENCODING




UNIVERSAL CONSTITUENT ENCODER RECOMMENDED FOR FORWARD LINK TURBO CODES OF VARYING INTERLEAVER DEPTH

(57) Abstract

A method and apparatus for Turbo encoding uses a set of rate-compatible Turbo Codes optimized at high code rates and derived from a universal constituent code. The Turbo Codes have rate-compatible puncturing patterns. The method comprises: encoding a signal at a first and second encoder using a best rate 1/2 constituent code universal with higher code rates, the first encoder and the second encoder each producing a respective plurality of parity bits for each information bit; puncturing the respective plurality of parity bits at each encoder with a higher rate best puncturing patterns; and puncturing the respective plurality of parity bits at each encoder with a lower rate best puncturing pattern. In a variation, the best rate 1/2 constituent code represents a concatenation of polynomials $1+D^2+D^3$ (octal 13) and $1+D+D^3$ (octal 15), D data bit. A Turbo Encoder is provided which has hardware to implement the method.